

Claims

1. An interactive audio system comprising:

an audio source;

5 a playing terminal connected to the audio source by means of a data link; and

an audio transducer and a user control device connected to the playing terminal,

wherein the audio source is arranged to transmit a plurality of audio components to the playing terminal by means of the data link, each audio component comprising audio data relating to an audible sound or track, the playing terminal being arranged to output
10 the audible sound or track corresponding to each audio component, by means of the audio transducer, the user control device being arranged to enable user-selection of one of the audio components as a focus component based on the user selecting one of the audible sounds or tracks being emitted from the audio transducer, the playing terminal being further arranged to control the quantity of transmitted data, relating to each audio
15 component, sent from the audio source to the playing terminal, the quantity of transmitted data being dependant on the selected focus sound or track.

2. A system according to claim 1, wherein the playing terminal is further arranged for spatially processing the audio components so as to add positional data, indicating a
20 position in space, relative to the audio transducer, at which each audio component is to be perceived.

3. A system according to claim 2, wherein the positional data comprises information relating to the three-dimensional position in space at which the audible sound or track is
25 to be perceived.

4. A system according to claim 1, wherein the quantity of transmitted data is defined by the transmission bit-rate, the playing terminal being arranged to set the bit-rate of the audio component, selected as the focus component, to a first predetermined bit-rate, and the bit-rate of the or each other audio component to a second predetermined bit-rate.

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5. A system according to claim 4, wherein the first and second predetermined bit-rates are set such as to enable higher quality audio reproduction of the focus component as compared with the audio reproduction of the or each other audio component.

10 6. A system according to claim 1, wherein the playing terminal is arranged to control the quantity of transmitted data sent from the audio source by means of (a) causing the audio source to stream the focus component at a predetermined bit-rate, and (b) causing the audio source to transmit, for each non-focus component, a non-continuous data burst of audio data relating to the sound or track, or a fraction of the sound or track.

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7. A system according to claim 6, wherein the playing terminal is arranged to receive the burst of audio data, relating to each non-focus component, and to store the burst of data for subsequent replaying at the playing terminal.

20 8. A system according to claim 3, wherein the user control device comprises a position sensor for being mounted on a body part of a user, the position sensor being arranged to cause selection of an audio component as the focus component by means of generating position data indicating the relative position of the user's body part, the playing device thereafter comparing the position data with the positional data added to
25 each of the audio components so as to determine the audible sound or track to which the user's body part is directed.

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9. A system according to claim 8, wherein the position sensor is a head-mountable sensor, the playing device being arranged to determine the audible sound or track to which a part of the user's head is directed.

5 10. A system according to claim 1, wherein the user control device comprises a selection switch or button.

11. A system according to claim 1, wherein the user control device comprises a voice recognition facility arranged to receive audible commands from a user and to interpret
10 the received commands so as to determine which audio component is selected as the focus component.

12. A system according to claim 1, wherein the data link is a wireless data link.

15 13. A system according to claim 12, wherein the wireless data link is established over a mobile telephone connection.

14. A system according to claim 1, wherein each audio component is representative of a link to a further sub-set of audio components stored at the audio source, the playing
20 device being operable to request transmission of the sub-set of audio components in the event that a link represented by an audio component is operated.

15. An interactive audio system comprising:

a playing terminal connected to one or more audio sources by means of a respective
25 data link or respective data links; and

an audio transducer and a user control device connected to the playing terminal,

wherein the playing terminal is arranged to receive a plurality of audio components from the one or more audio sources by means of the data link or data links, each audio component comprising audio data relating to an audible sound or track, the playing terminal being arranged to output the audible sound or track corresponding to each audio component, by means of the audio transducer, the user control device being arranged to enable user-selection of one of the audio components as a focus component based on the user selecting one of the audible sounds or tracks being emitted from the audio transducer, the playing terminal being further arranged to control the quantity of transmitted data, relating to each audio component, sent from the or each audio source to the playing terminal, the quantity of transmitted data being dependant on the selected focus sound or track.

16. A playing terminal for use in an interactive audio system, the playing terminal comprising:

a first port for receiving a plurality of audio components from a remote audio source, each audio component comprising audio data relating to an audible sound or track which can be played through an audio transducer means connected to the playing terminal;

a second port for receiving selection commands from a user control device which is connectable to the playing terminal; and

a processing means connected to the first and second ports,

wherein the processing means is arranged to (a) receive the audio components from the first port and to play the audible sound or track relating to each audio component by means of the audio transducer, (b) receive a selection command from the second port, the selection command being indicative of one of the audible sounds or tracks currently selected by a user as a focus sound or track, and (c) send a control signal to the audio source by means of the first port, the control signal indicating the quantity of data,

relating to each audio component, to be transmitted from the audio source to the playing terminal, the quantity of data being dependant on the audio component selected as the focus component.

- 5 17. A playing terminal according to claim 16, further comprising means arranged to spatially process the audio components so as to add positional data, indicating a position in space, relative to the audio transducer, at which each audio component is to be perceived.

- 10 18. A method of operating an interactive audio system, the method comprising:

receiving, at a playing terminal, a plurality of audio components transmitted over a data link from a remote audio source, each audio component comprising audio data relating to an audible sound or track;

- 15 playing each of the audio components so as to output their respective audible sound or track from an audio transducer connected to the playing terminal;

selecting one of the audible sounds or tracks as a focus sound or track; and

- 20 in response to the selection step, transmitting a control signal to the remote audio source so as to control the quantity of transmitted data, relating to each audio component, at which the audio components are transmitted from the audio source, the quantity of transmitted data being dependant on the selected focus sound or track.

19. A method according to claim 18, further comprising the step of spatially processing the received audio components so as to add positional data, indicating a position in space, relative to the audio transducer, at which each audio component is to be perceived.
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20. A method according to claim 19, wherein the positional data comprises information relating to the three-dimensional position in space, relative to the audio transducer, at which the audible sound or track is to be perceived.

5 21. A method according to claim 18, wherein the quantity of transmitted data is defined by the transmission bit-rate, the playing terminal setting the bit-rate of the audio component, selected as the focus component, to a higher bit-rate than that of each of the other audio components.

10 22. A method according to claim 18, wherein the playing terminal controls the quantity of transmitted data sent from the audio source by means of (a) causing the audio source to stream the focus component at a predetermined bit-rate, and (b) causing the audio source to transmit, for each non-focus component, a non-continuous burst of audio data relating to the sound or track, or a fraction of the sound or track.

15 23. A method according to claim 22, wherein the playing terminal receives the burst of audio data, relating to each non-focus component, and stores the burst of data for subsequent replaying at the playing terminal.

20 24. A method according to claim 18, wherein the step of selecting one of the audible sounds or tracks as a focus sound or track comprises operating a control device in the form of a position sensor mounted on a body part of a user, the position sensor causing selection of an audio sound or track as the focus sound or track by means of generating position data indicating the relative position of the user's body part, the playing device
25 thereafter comparing the position data with the positional data for each of the audio components so as to determine the audible sound or track to which the user's body part is directed.

25 A method according to claim 24, wherein the position sensor is a head-mountable sensor, the playing device determining the audible sound or track to which a part of the user's head is directed.

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26. A method according to claim 18, wherein the step of selecting one of the audible sounds or tracks as a focus sound or track comprises operating a control device in the form of a selection switch or button.

10 27. A method according to claim 18, wherein the step of selecting one of the audible sounds or tracks as a focus sound or track comprises operating a control device in the form of a voice recognition facility which receives audible commands from a user and interprets the received commands so as to determine which audible sound or track is selected as the focus sound or track.

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28. A method according to claim 18, wherein the data link is a wireless data link.

29. A method according to claim 28, wherein the wireless data link is established over a mobile telephone connection.

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30. A method according to claim 18, wherein each of the audible sounds or tracks represents a link to a further sub-set of sounds or tracks, the method further comprising the step of operating one of the links so that audio components relating to the further sub-set of sounds or tracks are transmitted from the audio source to the playing terminal
25 over the data link.

31. A method according to claim 18, wherein each of the audible sounds or tracks represents a link to a web-site of a service provider.

- 5 32. A computer program stored on a computer-usable medium, the computer program comprising computer-readable instructions for causing a processing device to perform the steps of:

10 receiving a plurality of audio components transmitted over a data link from a remote audio source, each audio component comprising audio data relating to an audible sound or track;

playing each of the audio components so as to output their respective audible sound or track from the audio transducer connected to the processing device;

setting one of the audible sounds or tracks as a focus sound or track; and

15 in response to the setting step, transmitting a control signal to the remote audio source so as to control the quantity of transmitted data, relating to each audio component, at which the audio components are transmitted from the audio source, the quantity of transmitted data being dependant on the focus sound or track.

33. An interactive audio system comprising:

20 an audio source means;

audio playing means connected to the audio source means by a communication means; and

an audio production means and a user control means connected to the audio playing means,

wherein the audio source means is arranged to transmit a plurality of audio components to the audio playing means by means of the communication means, each audio component comprising audio data relating to an audible sound or track, the audio playing means being arranged to output the audible sound or track corresponding to
5 each audio component, by means of the audio production means, the user control means being arranged to enable user-selection of one of the audio components as a focus component based on the user selecting one of the audible sounds or tracks being emitted from the audio production means, the audio playing means being further arranged to control the quantity of transmitted data, relating to each audio component, sent from the
10 audio source means to the audio playing means, the quantity of transmitted data being dependant on the selected focus sound or track.